

11. City of Mesa

The City of Mesa is located 12 miles southeast of Phoenix and covers more than 132 square miles. Mesa is Arizona's third largest city and is among the fastest growing communities in the state. The City of Mesa service area is located in the SRV, south of the Salt River, north of the Gila River and the San Tan Mountains, and west of the Goldfield Mountains. The Mesa MPA is located north of Germann Road, west of Meridian Road, east of Mesa City limits, and south of the SRPMIC. The local economy of Mesa is based primarily on retail and wholesale trade, services, and contract construction, plus some light manufacturing. The City of Mesa also boasts a strong economy and is the retail center of eastern Maricopa County.

According to the ADWR Annual Water Withdrawal and Use Report, in the City of Mesa in 1998, a total of 6,385 af of groundwater were pumped and delivered. Also, 78,936 af of water were received from other rights including 49,241 af of SRP water; 1,988 af of groundwater from other IDs; 22,782 af of CAP water; 2,655 af of RWCD water; 794 af of effluent; and 1,476 af of tailwater. Of that total of 78,936 af of water received from other rights, 2,309 af were used for treatment plant backwash leaving a total of 76,627 af received from other rights. Of the total 83,462 af of water received (i.e. 6,385 + 76,617), approximately 3,664 af were delivered to other rights leaving a total of 79,798 af to be used and delivered in the Mesa area.

A. Plans to Take and Use CAP Water

The City of Mesa currently has a contract for 36,388 af of CAP water. This includes 20,129 af received under the 1983 allocation and 16,259 af of transfers. The transfers included 5,933 af from Desert Sage; 768 af from Desert Sands; 2,697 af from Crescent Valley Utility; 3,932 af from Turner Ranches; 833 af from Williams Air Force Base; 596 af from QCID; and 1,500 af from the Arizona State Land Department (ASLD). Under the Settlement Alternative, the City of Mesa would receive an additional 7,115 af of CAP water. That CAP water would be delivered for a 50-year contract period (i.e., from 2001-2051). The CAP water would be used to supplement both current and projected water supply demands over the next 50 years and would help reduce the continuing dependence on pumping groundwater from an overdrafted groundwater system. Table L-M&I-63 outlines the proposed allocations by alternative.

Table L-M&I-63 CAP Allocation Draft EIS City of Mesa – Proposed CAP Allocation		
Alternative	Allocation (in afa)	Priority
Settlement Alternative	7,115	M&I
No Action	0	-
Non-Settlement Alternative 1	7,115	M&I
Non-Settlement Alternative 2	0	-
Non-Settlement Alternative 3A	0	-
Non-Settlement Alternative 3B	7,784	NIA
Existing CAP Allocation	36,388	-

Figure L-M&I-32 shows the service area and MPA for the City of Mesa. The service area covers approximately 84,278 acres, and the MPA covers approximately 109,108 acres. The City of Mesa has two water treatment plants. These include the Mesa CAP Water Treatment Plant, which is located at Brown Road and currently treats CAP water. It has a total capacity of 53,850 afa. After leases to Arizona Water Company for 1.4 mgd and to the City of Chandler for 3.27 mgd, the City of Mesa's capacity is 48,500 afa. The Val Vista Water Treatment Plant currently treats 100,800 afa of SRP water. CAP water could be wheeled through the SRP system for treatment at the Val Vista Water Treatment Plant.

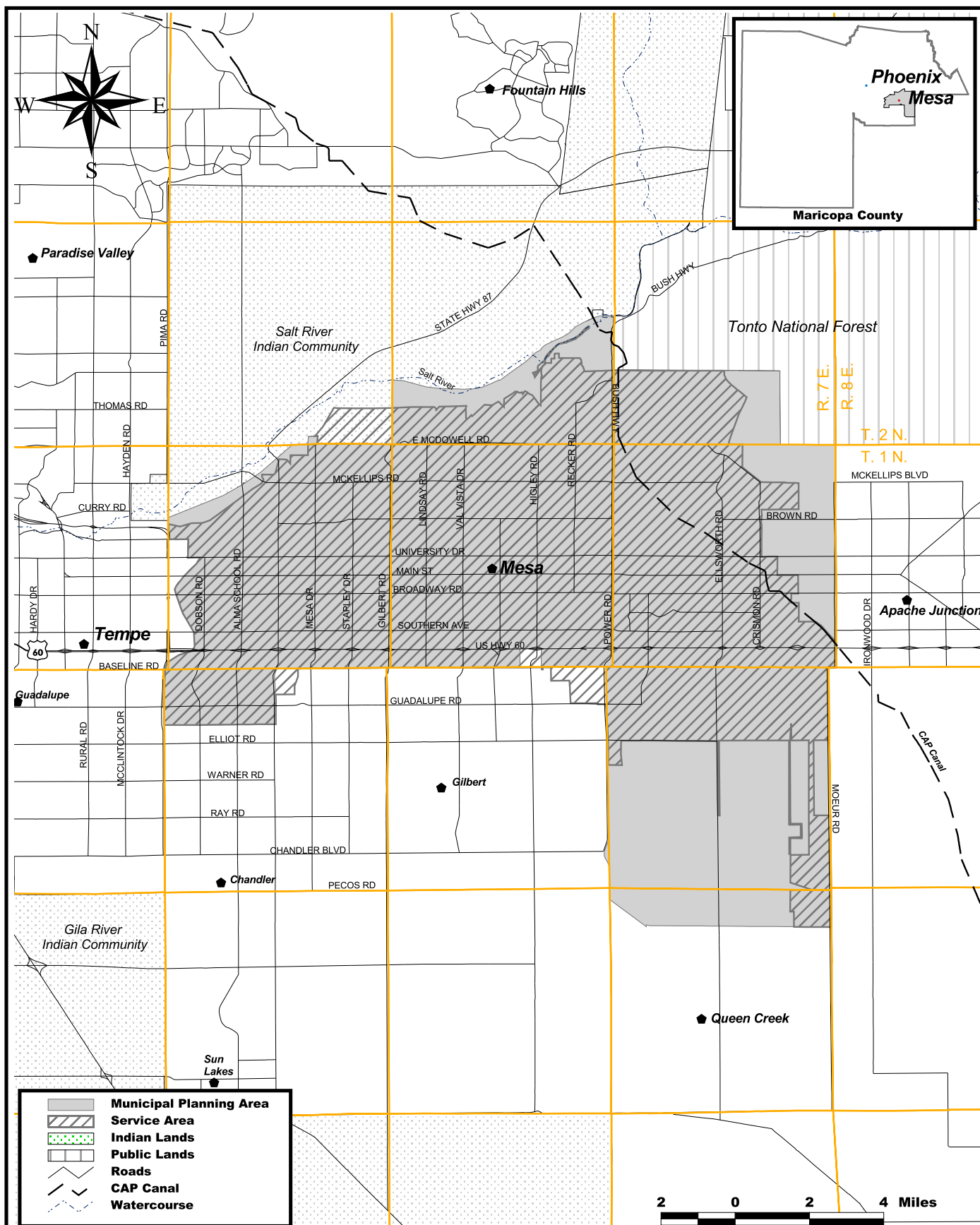
The City of Mesa also utilizes the following recharge facilities. Mesa is entitled to 24.86 percent of the GRUSP capacity. GRUSP currently has permits to handle 44,000 afa of CAP water; 30,000 afa of effluent; and 85,869 afa of Salt River/Verde River water. If GRUSP recharged 100,000 afa, Mesa could store up to 24,860 afa of CAP water. The Red Mountain recharge facility currently handles 2,000 afa of CAP water. No additional facilities would be required to take and treat the additional CAP allocation (Plumb 2000).

B. Population Projection

The population in 1985 for the City of Mesa area was 38,530. The estimated 2001 population level is 425,238, and the estimated 2051 population level is 664,700.

C. Water Demand and Supply Quantities

As previously shown in Appendix C – M&I Sector Water Uses, it is estimated that water demand in the City of Mesa would increase from 78,490 af in year 2001 to 122,689 af in year 2051. The projected water uses both by water source and alternatives are provided below in Table L-M&I-64. Based on anticipated water demands, CAP water which would be allocated under the Settlement Alternative would provide nine percent and six percent of the current estimated water supply required for the City of Mesa for the years 2001 and 2051, respectively.



CAP Allocation Draft EIS **General Location Map** **City of Mesa**

June 2000

Figure #L-M&I 32

Table L-M&I-64 CAP Allocation Draft EIS City of Mesa – Projected Water Use										
Alternative	Annual CAP Deliveries		Groundwater		Effluent		Other Surface Water*		Total Demand	
	2001	2051	2001	2051	2001	2051	2001	2051	2001	2051
Settlement Alternative	19,067	51,103	10,587	10,587	959	959	47,877	60,040	78,490	122,689
No Action	19,067	40,599	10,587	10,587	959	11,463	47,877	60,040	78,490	122,689
Non-Settlement Alternative 1	19,067	47,532	10,587	10,587	959	4,530	47,877	60,040	78,490	122,689
Non-Settlement Alternative 2	19,067	40,599	10,587	10,587	959	11,463	47,877	60,040	78,490	122,689
Non-Settlement Alternative 3A	19,067	40,599	10,587	10,587	959	11,463	47,877	60,040	78,490	122,689
Non-Settlement Alternative 3B	19,067	47,532	10,587	10,587	959	4,530	47,877	60,040	78,490	122,689
*SRP and other ID water										
Note: A more detailed breakdown of supplies may be found in Appendix C.										

It is estimated that the demand for water at the end of the CAP contract period would be approximately 122,689 af. For all alternatives, there is estimated to be no unmet demand with or without the additional CAP allocation.

D. Environmental Effects

The following sections include a general description of existing conditions relating to land use, water resources and socioeconomics for each entity. The following summaries also include a description of the existing conditions and brief description of the impacts to biological and cultural resources that would result from construction of CAP delivery facilities and conversion of desert and agricultural lands to urban uses.

1. Land Use

According to data from MAG, the land use designations in the City of Mesa MPA in 1995 consisted of approximately 9,795 acres of agriculture, 62,060 acres of developed land, 870 acres of rural land, 34,133 acres of vacant land, and 2,250 acres of water, including lakes, rivers and canals. As described in the introduction to this appendix, the 1995 MAG categories were redefined into three new categories (i.e., agriculture, desert and urban). These 1995 data were also updated and adjusted based on reviews of the 1998 aerial photography and the field surveys that were completed to assess biological resources for this EIS. Table L-M&I-65 provides the projected acres of land within the City of Mesa MPA that are agriculture, desert or urban and the number of acres expected to change from the existing category for the years 2001 and 2051.

Table L-M&I-65 CAP Allocation Draft EIS City of Mesa – Projected Land Use Changes Within the Service Area (in acres)							
Alternative	Year	Agriculture	Agriculture Urbanized	Desert	Desert Urbanized	Urban	Changes to Urban Acreage
Settlement Alternative	2001	1,420	--	12,435	--	95,253	--
	2051	401	1,019	0	12,435	108,707	13,454
No Action	2001	1,420	--	12,435	--	95,253	--
	2051	401	1,019	0	12,435	108,707	13,454
Non-Settlement Alternative 1	2001	1,420	--	12,435	--	95,253	--
	2051	401	1,019	0	12,435	108,707	13,454
Non-Settlement Alternative 2	2001	1,420	--	12,435	--	95,253	--
	2051	401	1,019	0	12,435	108,707	13,454
Non-Settlement Alternative 3A	2001	1,420	--	12,435	--	95,253	--
	2051	401	1,019	0	12,435	108,707	13,454
Non-Settlement Alternative 3B	2001	1,420	--	12,435	--	95,253	--
	2051	401	1,019	0	12,435	108,707	13,454

2. Archaeological Resources

Most of the previous survey coverage within the City of Mesa MPA has been linear (e.g., Macnider et al. 1999), although many small block surveys have also occurred, primarily for urban development. The MPA contains two major areas of high cultural resource sensitivity. The northernmost area, encompassing the banks and lower terraces of the Salt River, is characterized by many significant Hohokam remains, including Pueblo Ultimo, Mesa Grande, Crismon Pueblo, Casa del Omni, Pueblo Moroni, and Las Piedras. Many of these sites, which are associated with major irrigation systems, were documented during the late 1800s and early 1900s (e.g., Turney 1929). Although most have been completely obliterated by urban development, surface remains of these once-extensive sites can still be found; intact subsurface remains, including canals, also might be present (e.g., Dennis 1989). Numerous previously recorded sites also are known to have been present in the southeastern portion of the City of Mesa MPA, including Rittenhouse Ruins, the Midvale Site, the Ordinance Site, and El Horno Grande. Prehistoric cultural resource types that might be expected in these areas include artifact scatters, agricultural features, burials, and canals. Protohistoric and early historic Pima farmsteads and artifact scatters also might be present. Areas of moderate cultural resource sensitivity elsewhere within the MPA include prehistoric as well as historic sites. Known historic resources include trash scatters, roads, canals, orchards, and buildings associated with the early history of Mesa and the surrounding areas.

Cultural resource sensitivity areas in the MPA are shown on Figure L-M&I-33. Based on the limited data used to generate the cultural sensitivity designations, the potential for cultural resource impacts in the City of Mesa MPA is high to moderate. Mitigation of cultural resource impacts due to urban expansion would be determined by local jurisdictions and development of applicable permit requirements (such as the CWA Section 404 permit). Mitigation for such impacts would be dependent on the requirements of the local jurisdiction. There would be no cultural resource impacts from construction of CAP water delivery facilities, since no new facilities would be required.

3. Biological Resources

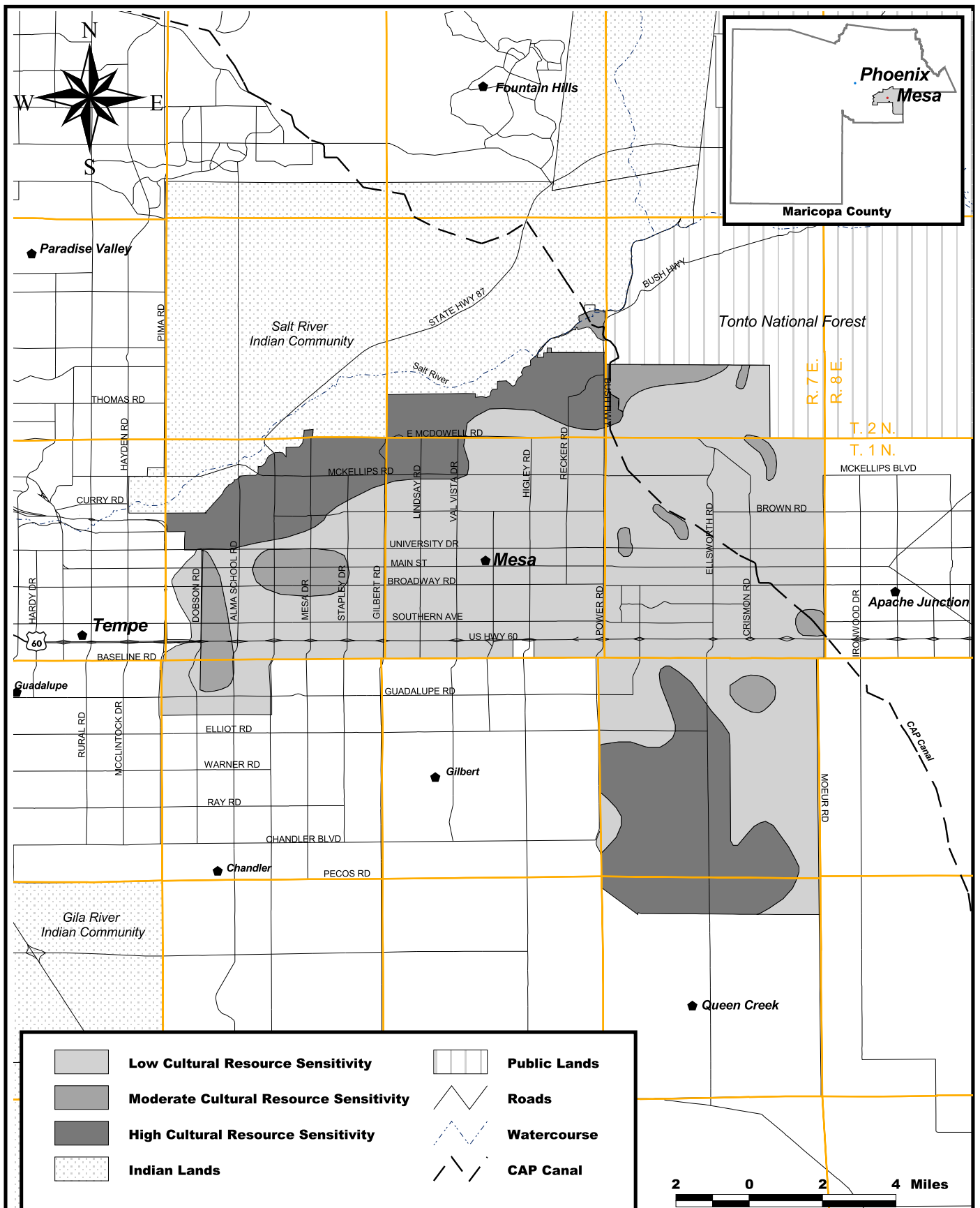
Existing Habitats

Little natural habitat remains within the gravelly and silty plains of the City of Mesa MPA. Most of the area has been developed for agriculture or urban use. On courser soils of higher ground (to approximately 2,000-foot elevation), there are fragments of Bursage-Foothills Paloverde Association where saguaro density is moderate. Silty soils support Creosote-bush Association where saguaros and other trees are sparsely distributed. Blue Paloverde/Desert Ironwood Association occurs along drainages and is characterized by desert ironwood, blue paloverde, and mesquite. The habitat zones are shown on Figure L-M&I-34. Table L-M&I-66 provides the habitat acreages for the habitat zones described above.

Table L-M&I-66 CAP Allocation Draft EIS City of Mesa– Habitat Acreages	
Vegetation Name	Acres
Developed	96,673
Bursage/Foothills Paloverde	1,892
Velvet Mesquite	3,064
Creosote-Bush	7,307
Blue Paloverde/Desert	171
Total	109,108

Impacts to Biological Resources

Under the No Action Alternative, urban growth within the City of Mesa MPA over the 50-year study period would result in loss of an estimated 12,461 acres of Sonoran Desert Scrub Associations and wildlife resources. There may also be indirect impacts to undeveloped habitat and wildlife occurring in adjacent undeveloped habitat. Under the action alternatives, there is no difference from the No Action baseline. No new CAP water delivery facilities are required, so no additional construction-related impacts to biological resources would occur.



CAP Allocation Draft EIS **Cultural Resources** **City of Mesa**

June 2000

Figure #L-M&I 33

Figure No. L-M&I-34

Potential T&E Species and Acres of Potential T&E Species Habitat

Because the allocation of CAP water has no effect on urban growth, there would be no effect on T&E species from the CAP allocation. The City of Mesa would be responsible for complying with the relevant provisions of the ESA, as it permits and approves future growth. The City of Mesa MPA is located within Maricopa County for which there are 14 T&E species listed by the USFWS. No acres of potentially suitable habitat for the cactus ferruginous pygmy-owl were identified within the Mesa MPA.

4. Water Resources

Demands in the City of Mesa have historically been met with water provided by SRP (in the western part of Mesa) and groundwater pumped from the underlying sedimentary rocks. Groundwater levels have declined in response to this pumping, and there has been subsidence associated with these lower groundwater levels. The concentration of TDS in the underlying groundwater ranges from less than 500 to over 1,000 ppm.

Estimated groundwater level impacts are summarized in Table L-M&I-67, which shows the groundwater level impacts or the difference between the change in groundwater levels for each alternative relative to the change for the No Action Alternative. Most of the City of Mesa falls within two groundwater sub-areas used for the analysis. Table L-M&I-67 shows groundwater conditions estimated for areas which include the western part of the City of Mesa (in the SRP service area), the northeastern part, and the southeastern part (in the vicinity of the Williams Field Airport).

Under the No Action Alternative, over the 2001 to 2051 period, groundwater levels in the western part of Mesa would rise by about 25 feet, while groundwater levels would decline in the eastern part of Mesa by about two to 23 feet. These groundwater level changes reflect, in part, continued reliance on groundwater to meet demands, both in the City of Mesa and in adjacent areas. Offsetting this is the recharge of CAP water in the GRUSP facilities. Substantial changes in groundwater quality would not be anticipated under the No Action Alternative. There would be the potential for subsidence due to the lower groundwater levels in the vicinity of the Williams Field Airport.

For the Settlement Alternative, groundwater levels would be higher in year 2051 in the western and northeastern part of the City of Mesa. Those higher groundwater levels reflect that additional CAP water received through an exchange of effluent with GRIC would have a greater impact on groundwater levels than the reduction in recharge of CAP water in the GRUSP facilities. For the other alternatives, groundwater levels would be lower than under the No Action Alternative, primarily due to the reduction in CAP water recharged in GRUSP. Substantial changes in groundwater quality would not be anticipated for any of the alternatives. There would be the potential for subsidence in the eastern parts of the City of Mesa.

Table L-M&I-67 CAP Allocation Draft EIS City of Mesa–Groundwater Data Table		
Alternatives	Mesa East*	
	Estimated Groundwater Level Change from 2001-2051 (in Feet)	Groundwater Level Impact** (in Feet)
No Action	25/-2/-23	--
Settlement Alternative	39/-1/-31	14/1/-8
Non-Settlement Alternative 1	21/-11/-10	-4/-9/13
Non-Settlement Alternative 2	14/-13/-56	-10/-11/-33
Non-Settlement Alternative 3A	-6/-23/-61	-31/-21/-38
Non-Settlement Alternative 3B	-9/-31/-41	-34/-29/-19
*Values correspond to the Mesa West, Mesa East, and Williams Field Airport sub-areas, respectively, as discussed in Appendix I. ** Computed by subtracting the estimated groundwater decline from 2001 to 2051 for the No Action Alternative from the estimated change in groundwater level for the same period for the alternative under consideration. The estimated impact is considered to be more accurate than the estimated decline in groundwater levels.		

5. Socioeconomic

The same population growth is supported under all alternatives, including the No Action Alternative. However, the cost of providing water may vary by alternative. Costs were estimates, on a per af basis, of providing the proposed allocations and, in their absence, alternative water supplies. The alternative water supplies include joining the CAGR and, as needed, treating and reusing effluent. The difference in cost for this small increment of the City of Mesa's total water supply is considered insignificant. It should be noted that the increment of demand met by the proposed CAP allocation is approximately 5.8 percent of the total year 2051 demand for the City of Mesa.

Table L-M&I-68 CAP Allocation Draft EIS City of Mesa–Cost of Potable Water for Additional Allocation Increment		
Alternative	Cost of Water (\$ per af)	Water Source
Settlement Alternative	154 ^{a,b}	CAP Allocation
No Action	237 ^a	Reclaimed Water
Non-Settlement Alternative 1	154 ^a	CAP Allocation
Non-Settlement Alternative 2	237 ^a	Reclaimed Water
Non-Settlement Alternative 3A	237 ^a	Reclaimed Water
Non-Settlement Alternative 3B	154 ^a	CAP Allocation
Notes: a. Estimated average unit cost expressed in year 2000 dollars. b. Does not include monetary contribution to the GRIC Settlement.		